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Soybean breeding for nutritional and functional quality in China

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Soybean originates from China, which has long been a staple of the human diet in Asia. It is an important resource of vegetable protein and oil in China. Soybean consumption each year is over sixty million tons; however, the total soybean production is fifteen million tons in China. Thus China's soybean import is 83.38 million tons in 2016.

Soybean also has some putative health beneficial properties, such as isoflavone, saponin, oligosaccharide, phospholipid, polypeptide and dietary fiber etc., which has led to increase interest and demand for soybeans and soy-based products.

With the improved living standards, people pay more attention on the soybean nutritional and functional characteristics worldwide. Therefore, this report mainly introduces the status of soybean molecular marker-assisted selection breeding for nutritional and functional quality in China, including soybean storage protein, trypsin inhibitor, lipoxygenase, isoflavone, and soymilk etc. We constructed the high-density genetic linkage map to locate the QTL and cloned the candidate genes relating to oil content, isoflavone and fatty acid compositions in soybean seeds. We also review the registration status of soybean varieties for nutritional and functional quality in China, such as cultivars with null anti-nutritional factors, low off-flavor, high isoflavone content etc. These soybean cultivars are of benefit to improve the quality of soybean products in China.